A PROPOSAL TO INCREASE AGRICULTURAL PRODUCTION THROUGH EFFECTIVE COMMUNICATIONS BY AGRICULTURAL UNIVERSITIES IN INDIA

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A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Technical Journalism

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1969

Approved by:

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CHAPTER I

INTRODUCTION

India has been a land of sages, but definitely not a land of sufficiencies in agricultural production in the recent history. Multiplying millions of Indian people who form about 14 percent of the world's total are crowded into just 2.4 percent of the world's land surface. This enormous population of over 500 million has to be fed, clothed and sheltered adequately. Nowhere else do so many linguistically differentiated people so many varying cultures and traditions and so much illiteracy and so many sociological problems exist.

Agriculture is the occupation of over 70 percent of the population. President Zakir Hussain of India, in a national broadcast, August 14, 1968 on the eve of the 21st Anniversary of Independence observed, ". . . a breakthrough in agriculture is in sight, its materialization depends on our ability to tackle the formidable problems of agricultural organization. It needs to be plainly admitted by all that the failure has been on the human side and there lies the greatest challenge to us. . . ."

If agriculture development has to take place in India, with greater momentum, we have to know and understand a little beyond the villages and that it is our responsibility in diffusing agricultural information toward modernization. This need for information applies not only to the farmers, who are fundamental producers of agricultural wealth, but to all concerned in marketing, processing and ultimate consumption of the product.

Agricultural information is a consumable product and perishable too, if not transported in an effective manner. This transportation of information

should result in something more than simply possessing the product (the knowledge)--it has to motivate the farmer to utilize (consume) the information, so that increased agricultural production results.

The farmers of India, with their innate abilities, fine qualities and leadership potential, would make a strong base on which to build a modern nation, only if they change. Otherwise, they will watch technological growth from the sidelines; social change will happen to them rather than their playing an active part in bringing it about; they will be a part of the relatively inert mass out of which the leaders of development in the country are trying to fashion something dynamic and vital.

Effective and efficient communication can offer a possible way to overcome this situation.

This report, dealing with a proposal to increase agricultural production through effective communications by the Agricultural universities in India attempts to discuss the problems of Indian agriculture, the elements, and processes of communication and suggests that communication centers which can teach, extend communication and undertake research in communication are necessities.

1. Communication--A Major Problem in Increasing Agricultural Production

Nearly all authorities on the world food situation have agreed that agriculture is an important occupation in most developing countries. A sound national economy depends on a sound agricultural economy, a sound industrial economy and communication among all concerned. What are the possibilities and prospects of improving communications in achieving increasing agricultural production in a country like India; i.e. how does

communication help increase agricultural production; and how could we communicate to farmers the information needed, and to extension personnel whose suggestions for innovations are accepted?

The results of any agricultural development program basically depend on two factors. First, scientific and rational prescriptions to specific problems (39, p. 1). Second, and more important, dissemination and diffusion of agricultural information to the farmers.

> Communication is vital to progress. Ignorance is one of the chief allies of poverty. Ignorance may result from being either uninformed or misinformed. Ignorance and illiteracy are not synonymous. A person who can read, but does not, is no better than a person who cannot read. Literacy can open the door to knowledge, however, and thus may be a big step toward dispelling ignorance. Knowledge of truth is like a great light; it dispels the darkness of ignorance and superstition. (13, p. 1)

2. Agricultural Production--An Interrelated Problem

Dr. S. Radhakrishnan, Indian philosopher and second president of the Indian nation, once said that all culture flows from agriculture; thereby indicating the priority and importance of agricultural development, coupled with development of human resources. Agricultural development and production, however, cannot be singled out from other related development programs. It is an intensely human phenomenon--technology, social organization and both personal attitudes and values are involved. And, according to Mosher (35, p. 40), the relationships are reciprocal, each affecting the other. But the attitudes and values of persons have a measure of autonomy not freely shared by the other factors, because it is persons who invent or develop technologies and it is persons who mold social organizations. This interplay of factors is something completely external, yet highly important,

to the professional agent of change. Man's abilities and values as expressed in personal behavior are a vital process of agricultural development, Mosher stated.

3. Problems of Indian Agriculture

Among many other problems of Indian agriculture, the most serious are:

(i) The basic problem of Indian agriculture continues to be low productivity. Average yields per hectare of some of the most important crops rank among the lowest in the world (Table 1).

Table 1. Yields in 100 Kgs./Hectare

Country	Rice	Wheat	Maize	Millets and sorghum	Sugar-cane	Cotton (lint)
Japan	50.9	24.3	24.2	15.6	608	1.0
U.S.A.	48.5	17.7	45.4	35.0	590	5.9
France	35.7	28.3	45.4	15.9	NA	NA
U.S.S.R.	28.7	14.4	26.1	9.5	NA	7.8
Iran	23.3	7.6	8.8	4.4	292	3.6
Pakistan	15.7	7.5	10.6	4.4	370	2.7
Brazil	14.5	8.6	13.1	NA	463	1.7
Philippines	13.5	NA	6.6	NA	456	3.6
Netherlands	NA	40.4	40.0	NA	NA	NA
India	12.8	8.2	9.9	4.0	398	1.1

Source: Production Year Book, Vol. 21, FAO, United Nations, Rome, 1967.

(ii) Eighty-two percent of India's total population of more than 500 million live in villages where roads and transportation facilities are scarce, and radios, telephones and suitable publications, including newspapers and other communications for farmers, are rare.

(iii) Seventy percent of the population depends on agriculture and the land for their living.

(iv) More than sixty percent of India's farms are small, fragmented, and rarely fertile or productive. About 60 percent of the operational holdings are below five acres (26, p. 10).

(v) Agriculture is carried on more as a way of life than as a business.

(vi) Farming still depends on the crudest implements, and bullocks or humans generally are the primary source of field power in most Indian states.

(vii) Weather is important in determining productivity, and it is most uncertain and unpredictable, as demonstrated during the recent drought years.

(viii) The conditions of production differ a great deal from area to area, necessitating wide variations in productivity techniques and in recommendations.

(ix) The 1961 census enumerated 1652 mother tongues in India; 14 are recognized as official languages in various parts of the country (3, p. 13). Each language, particularly those recognized, carries with it cultural, traditional and sociological problems.

(x) Illiteracy is a foremost problem. Only about twenty-four percent of the total population is literate (3, p. 62). There is only one well

educated person per 10,000 laborers* compared with one per 200 in the United States and one per 400 in other leading countries (8, pp. 22-24).

(xi) The farmers are nearly all economically poor.

(xii) Farmers follow less profitable methods because they are not aware that better methods exist, far from thinking of utilizing better methods on their own fields.

Brown (11, p. 15) suggested that most of the increases in food required to meet the projected increases in demand over the remainder of this century must come from raising the productivity of land already under cultivation. That is the most significant single fact to be considered in seeking a solution to the food-population problem.

Surface (49, pp. 1-3), who worked in India for two years, suggested that:

The basic problem is need for wider application of the advanced knowledge already known in India. Too little advanced information of more productive techniques trickles from the research stations to the hundreds of millions of small cultivators. One of the main reasons the Indian farmer follows less profitable traditional methods is that he simply does not know how to use better ones. In many cases he is not even aware that better ones exist, let alone that he can utilize them on his own land.

In so large and diverse a country as India, almost all methods and media of communication could be utilized in at least one place or another. However, effective communication of useful farming ideas can best be done by

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*United States, rather than English, spelling is used throughout the manuscript as it was prepared for a Graduate School in the United States.

carefully selecting media that can give the most benefit in return for the least relative cost--mass communications.

4. Community Development, Extension Education and Communication

India embarked on a program of community development with the fundamental objective of "destination man," when she had thrown off the yoke of British colonialism in 1947. Community development is a movement to promote better living for the whole community, with active participation of the people, on the initiative of the community. However, if this initiative is not spontaneous, community development agents resort to certain techniques to arouse and stimulate the initiative of the masses by educating them. Community development, therefore, has been variously referred to, as a process, a program, a procedure, a method and an objective. It is generally agreed that extension education is the activating force behind community development but it is only appropriate communication that activates the process and programs of extension education.

Extension education teaches the rural masses ways to improve their farms, homes and community institutions and to solve their interrelated problems. Experience in India has confirmed that methods of community development must be those of extension education. "India's program is unique in that it is both a community development and an extension program" (5). It is a community development program in that its major objective is to develop rural communities with greater reliance on self-help. It is an extension program in that it acts as a two-way channel--it brings scientific information to the rural populace and also takes their problems, which often are beyond their comprehension, to the research stations for solutions.

The relatively recent concept of communication is one born of necessity. Many extension workers and agencies in India not only need to know more about the techniques of teaching but also the art of communication. Complex technical or scientific information has been of little use to them. They have difficulty understanding such information and they find little in it to use to solve their problems or the problems of farmers.

"The future . . . is in the hands of two men--the investigator and the interpreter. We shall never lack for the administrator, the third man needed to complete this trinity of social servants. We have an ample supply of investigators. But there is a shortage of readable and responsible interpreters--men who can effectively play mediator between the specialist and laymen," said Glenn Frank (46, p. 11).

The preceding suggests an information gap between the farmers on one hand and scientists on the other. The gap results from a communication lag between the scientist, the extension worker and the farmer. Educating all three, and more particularly the farmer, could shorten the lag in communications.

Current recognition of the crucial role of education and communication in development stems in part from the urgent prodding of world food needs, which arise both from rapid population growth and from lagging agricultural production in developing countries like India.

5. Communication Important

In India's rural development plans communication's importance is evident.

The wide distribution of relevant, specific and practical knowledge of

improved agricultural practices is one of the main reasons for the success of American farmers. The land-grant universities have played the primary role in diffusing agricultural information. Any university that seeks to serve the agricultural community must be sure that its information reaches the farmers in an understandable form, a task of highest priority.

6. Agricultural Universities and Agricultural Communication Services

It is now generally accepted that education of the farmers is the only way for change to be accepted and sustained.

It is in this context that agricultural universities are being set up in India on the pattern of the land-grant institutions of the United States--to teach and train students, practical research workers, and active extension personnel. One of the major objectives of agricultural universities is to provide education for the rural people and help them apply the new knowledge to their conditions, so increased agricultural production results. This approach of the Government, which is the most recent, should help increase agricultural production in India.

To close the gap and supplement the efforts of the extension services, in developing agriculture, an agricultural communication service is needed. Such a service could accelerate agricultural development, not only in the regions near the agricultural universities but in the entire country.

India's future seems to be darkened by two factors--underproduction of food, feed and fiber and overproduction of population. Her leaders must communicate to and educate the masses as to how to alleviate both problems. Technologies are available for both. They must be communicated in an understandable way, and more important and more difficult, in ways acceptable to

the masses. Planned programs of education and principles of communication can light candles for all of India's darkest problems. And after all "It is better to light a candle than to curse darkness."

CHAPTER II

BASIC PROBLEM: BALANCING FOOD NEEDS AND POPULATION

The problems of improving agriculture and increasing food production are largely synonymous and correlated. Food is strength not only to individuals but also to nations. Any nation that cannot feed its people adequately cannot hope to play any great part in world affairs and may not even survive long. The gap between population and food production has been growing wider in India during the last two decades. Many are aware of the difficult food position that India inherited with her Independence. The country continues to depend on progressively large food imports as indicated (3, p. 212):

Year	Food grain imports in thousands of tons
1956	1,443
1961	3,495
1962	3,640
1963	4,556
1964	6,266
1965	7,462
1966	10,358

According to a study (conducted by the Economic Research Service, United States Department of Agriculture in 1965) of the 26 developing nations including India, agriculture is the most important industry and accounts for more than a third of the gross national or domestic product in 19 of 26 of the countries.

Discussing the need for developing agriculture, the report stated (2, p. 3), ". . . some progress has been made during the past decade toward closing the gap between world food needs and food consumption. Even so, food consumption levels, based upon daily per capita intake of calories, are below desirable levels in 11 of the 26 countries studied. India is included among the 11."

The food deficits are great. "For example," the report says, ". . . if the supplies of India were distributed as far as they would go at the rate of 2,300 calories per person per day, about a tenth of the population would be left totally without food. If the same food supplies were distributed at the United States' consumption rate of 3,190 calories per person per day, more than one-fourth (125,000,000) of India's population would be without food."

Alongside the low agricultural production is the rapid increase in population. Less developed or developing countries, including India, are almost by definition those with rapid rates of population growth. This phenomenon, aptly termed the "population explosion," though recent, is making an immeasurable impact on the already low and distressing food output.

Rising food prices, from low production and increased demand, cause inflation and reduce expenditures for developmental activities and economic growth. The effective demand for food is outrunning available supplies even with sharply increasing imports.

As food prices rise, upper and middle income groups increase their expenditures for food, but the low income groups, already using about four-fifths of their limited income to buy food, cannot increase expenditures enough to offset the price rise. They buy less and tighten their belts.

This results in social unrest, demonstrations, and riots with revolution possible.

Over the past several years prices of food grains in India have been sharply rising. That indirectly widens the gap between the have and have-not communities, which is not a healthy situation. Economic and political stability depends more on adequate food production than on any other single factor.

Research bears evidence that lack of proper food in the early stages of life may stunt both physical growth and mental development. The malnourished child of 1968 is the underdeveloped adult of 1988. "Malnutrition is by a wide margin, the world's number one health problem" (11, p. 14).

Industrial growth, which to a large degree depends on the raw material supplied by agriculture, is stunted by low agricultural production.

The visible symptoms of food shortages like inadequate food supplies, rising food prices, less food for the low income classes, economic and political instability, social unrest and even violence in some cases are intertwined with low agricultural and food production trends.

To summarize:

Agriculture is the biggest occupation in India. Agriculture needs to be efficient if the general productivity of the country is to rise satisfactorily.

Agriculture produces most of the food on which human life depends and it produces many fibers and industrial raw materials.

The purchasing power of rural people is a major part of the market for nonagricultural industries. In India, where most of the people are engaged in farming, a considerable amount of the country's purchasing power depends

on the prosperity of the agricultural sector.

A great many people will continue to depend on agriculture for a livelihood for many decades. With the rapid rates of increase in population that characterize India, and with a high capital cost of creating nonagricultural employment, it is unlikely that the absolute number of people engaged in agriculture will drop significantly for a long time.

Changes in agriculture produce changes in people--their knowledge, skills and attitudes--so, improvement in agriculture would improve society.

1. A View of the Present Situation

Agricultural development resulting in increased food production is taking place in India. It is a big job and seems to be going too slowly. To improve the difficult food situation in India, many development programs have been initiated with the intention of further increasing and augumenting agricultural productivity. These are as follows:

(i) Developing major irrigation resources and improving minor irrigation sources resulting in an enormous expansion of irrigation by wells and ground water. Special projects, like the pre-investigation of ground water and development surveys, are also being undertaken with the aid and cooperation of the United Nations organization and other aid programs.

(ii) Effective soil conservation, dry farming and land reclamation schemes have been put into operation.

(iii) Extensive distribution of fertilizers and operating schemes of green manuring, and rural and urban composting.

(iv) Distribution of improved and high yielding varieties of seed, and establishing central/state seed farms to produce the new varieties in

adequate quantities.

(v) Undertaking plant protection work on an intensive and extensive scale.

(vi) Initiation and implementation of intensive agricultural area and district programs, and crop insurance.

(vii) Providing loans in cash and kind to needy farmers.

(viii) Improving existing marketing facilities by introducing regulated markets and storage and warehousing facilities.

(ix) Educating the farmers by adult education and extension.

(x) Electrification of rural areas for water pumping sets to facilitate lift irrigation.

(xi) Providing incentives by crop competitions and honoring the farmers publicly.

(xii) Providing improved agricultural implements and other agricultural inputs at subsidized cost.

As a result of these programs:

(i) Total cropped area has increased by 26.1 million hectares from 1950-51 to 1965-66 (3, p. 207).

(ii) Net irrigated area increased by about 500 million hectares from 1950-51 to 1963-64 (3, p. 207).

(iii) Total area under food grains in 1965-66 was 111,642,000 hectares compared with 97,321,000 hectares in 1950-51, an increase of 11,962,000 hectares, about 14 percent in fifteen years (3, p. 208).

Efforts continue by about 40,000 block level extension workers and 50,000 village level workers in 5,370 community development blocks covering 566,900 villages of India to develop the villages and improve conditions for

the millions that inhabit them.

2. Communication Needed

Despite all these efforts in guided social and technological change, results of the program leave much to be desired; and India has not been able to achieve a "breakthrough" in productivity or a "yield take-off" stage, not so much due to inherent defects in the programs as to lack of effective exploitation of total manpower and effective communication between technologists (those who know) and the farmers (those who need to know). Communicating in a manner so that technology of agriculture is received, understood, accepted and applied is needed.

CHAPTER III

COMMUNICATION--DEFINITION, ROLE AND EFFECT

Various authors have defined and discussed "communication." In a recent study, by Minter (34, pp. 26-36), of 12 definitions of communication current in literature, the following by Raesh and Bateson was accepted as the most complete by the National Society for the Study of Communication.

> Communication does not refer to verbal, explicit and intentional transmission of message alone . . . The concept of communication would include all those processes by which people influence one another. . . . This definition is based upon the premise that all actions and events have communicative aspects, as soon as they are perceived by a human being; it implies, furthermore, that such a perception changes the information which an individual possesses and therefore influences him.

1. The Role of Communication

The role of communication in the development of agriculture in India is not only to inform and create an awareness among the farming publics but also to implant new ideas that change farming. The success of rural agricultural development depends on communicators to be sure that the transfer of useful ideas are from reliable sources and in tune with farmers' values, culture and other social factors. Understanding those factors continues to be an overriding challenge to extension educators. Useful ideas are useless until they are accepted or until they motivate those involved in the art and science of agricultural production to adopt and practice the ideas. Success lies in communicating the ideas and intended changes so that they are accepted and sustained. The extension worker, in the massive community development program for all purposes, also must be accepted. Therefore, he has a grave challenge and an exciting responsibility. The welfare of people,

and often their very lives, depend upon his skill in conceiving and executing effective agricultural development programs. His responsibility is balanced by tremendous opportunities to be of great service to the rural masses as they improve their social and economic status.

For agricultural development through extension education to be successful, therefore, it is not enough that an extension worker has good ideas. He must also know how to communicate them effectively. His success is determined by his ability to communicate ideas to others so that the knowledge, skill and attitudes are transferred. One has not taught if he has not communicated. He has not communicated if his ideas were not transferred.

2. Effect of Communication

Y. V. L. Rao (38, pp. 97-110) discussed the effect of communication in the development of economic, social and political spheres, the very objective of community development programs in India.

He feels that in the economic sphere:

(i) Communication helps a person find alternative ways of making a living. It is through communication that one gets to know the availability of different types of agricultural occupations. Once a farmer knows the various occupations and their pros and cons, he can make an appropriate decision. Lack of communication, on the other hand, results in stagnation of a man. No developing country can afford to have square pegs in round holes for that inefficiency wastes human energy and funds--not to mention the psychological stress and strain on the individual and on the community.

(ii) Communication helps reduce the pressure on land. Information helps people find alternative modes of activity and employment and thus